THE AMERICAN ARCHITECT AND BUILDING NEWS.

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IN December, 1875, the American Society of Civil Engineers appointed a committee "to investigate the varieties of nomenclature and classification used in different parts of the United States to designate the several kinds of stone-cutting and masonry, and the tools employed in such work, and also the corresponding terms used by French, German, and English writers on these subjects, and to inquire into the possibility of securing uniformity of practice in such nomenclature and classification." This committee reported at the eighth Annual Convention of the Society, held in June last at Philadelphia, that they had been unable to make satisfactory progress, partly owing to lack of time on their own part to devote to the investigation, but in a great measure owing to the unwillingness of members to reply to circular letters asking for information in regard to local usages and nomenclature. It was stated at the same time, that drawings of the tools employed, and of the varieties of masonry used, are to be prepared; and that to these are to be attached the local names used by the quarrymen, stone-cutters, and masons, together with the methods of measuring stone-cutting in common use.

THE value of such an investigation is apparent, even if it results only in the compilation of a dictionary of technical terms, without bringing about its secondary object, — the unification of technical terms in this country. The labors of the committee will be materially lightened in its philological researches by the "Technologisches Wörterbuch" just published by Tauchnitz, at Leipzig, — a dictionary of equivalent technical terms in French, German, and English, compiled by Herr A. Tolhausen, translator to the English Patent Office, and Herr L. Tolhausen, French Consul at Leipzig. If the work undertaken by the Society of Civil Engineers should be supplemented by similar investigations into the nomenclature of the other building-trades in this and other countries, many of the difficulties of the architectural student and of the young practitioner would be done away with. The only practicable way of prosecuting these investigations is by comparing the replies to questions contained in circular letters addressed to professional men and craftsmen; and it should be borne in mind, that neglecting to answer any such questions, even if it be hurriedly and imperfectly done, is likely to cause imperfections in the completed work which are quite as likely to inconvenience the negligent as the attentive correspondent.

MR. P. CHITTY, the city engineer of Houston, Tex., in a letter to the *Engineering News* asking for advice as to obtaining plans and specifications for the new building which is to replace the City Hall recently burned, says that "architecture of this character is not in my line; and architects who have tried to make a living here have failed to do so." This, though not sufficiently encouraging to warrant an architect in seeking his fortune in Texas, seems to show that whatever architect may be chosen to erect the building will be honorably supported by the head of the engineering department of the city.

SOME time ago a plan was adopted for utilizing the sewage of the city of Paris by discharging a large part of the liquid waste upon the plain of the neighboring town of Gennevilliers, where it was distributed over the surface as a fertilizer of the market gardens for which the land was used. This was done in virtue of a treaty between the towns; and the distribution and utilization of the sewage was undertaken by private companies in the hope of a profitable speculation. It should be remembered, by the way, that the night-soil of Paris is not allowed to pass into the sewers, but is received into cesspools which are emptied at night by neat-looking wheeled tuns or casks, into which the soil is pumped through a hose. (The process is supposed to be carried on without the escape of any unpleasant odor, — a pretension which the traveller who has seen the operation in his nightly walks will hardly indorse; though, at least, the tuns are tight, and the transportation inflicts no annoyance.) What was discharged at Gennevilliers, therefore, was the wash of the city and its sinks. For a time the experiment worked well, and proved remunerative. But it appears that the amount of sewage discharged was more than could be consumed, or else the process was one which could not safely be carried on on so large a scale; for after a time the sewage permeated the soil; and the people of the town have for some time complained urgently that it leaked into their cellars, and contaminated their wells.

THE city of Paris took no notice of the many complaints that were made; a petition addressed to the assembly as long ago as 1874 produced no effect; and the city even went on to extend its system of delivery, and aggravate its nuisance, until at last the Commune of Gennevilliers has taken up the matter in earnest, proclaims itself in danger of infection, and demands the cancelling of the agreement in virtue of which the system was established. It has pressed the matter so urgently before the *Conseil de Préfecture*, that a committee of officials has been appointed and put under oath to investigate and report whether the discharge of the sewage of Paris upon the plain of Gennevilliers proves to be unwholesome and injurious to the inhabitants, and especially whether the sewage gives out offensive odors or deleterious emanations; to what cause is due the overflowing into their cellars, of which the inhabitants complain; whether there is any change in the quality of the water of the wells at Gennevilliers that can be attributed to the distribution of the sewage; whether the water stands higher in the wells there than in those of the neighboring towns; and whether the level of the underground water-table has been raised by the discharge from the sewers. We should think that these last two questions would be exceedingly difficult to answer; and that any deductions from them were likely to be nugatory, if not illusory.

SOME little time ago (*American Architect* for June 24), we noticed a project brought forward by one Señor Gogorza of Colombia for a ship-canal across the Isthmus of Darien by the Cacarica Pass. A late number (Aug. 27) of the *Engineering News* gives some statistics of this route and a comparison with others, taken from the report in which Commander Selfridge some time ago urged the advantages and feasibility of such a canal, but by a different pass. Señor Gogorza's scheme is not now first proposed: he was

preparing it at the time that Commander Selfridge made his surveys. Of the Cacarica route, the *News* says, it was sufficiently examined by Selfridge's party to make it clear that it would be more difficult and expensive than the Napipi route which he recommends. Rains prevented the carrying of levels through the Cacarica Pass; but they were carried to a height of two hundred and seventy feet, and a barometrical determination by Commander Selfridge himself fixed the height of the pass at four hundred and ten feet. According to his report, the whole length of the Gogorza route would be one hundred and thirty-six miles; and it would require fifty-five miles of canal, of which, in order to reduce the summit level to one hundred and sixty feet, fifteen or eighteen miles must be a through cut in the rock. This would cost, it is estimated, some two hundred and fifty millions of dollars. The route preferred by Commander Selfridge beginning like the former with the Atrato River, but continued along the Napipi to Chiri-Chiri Bay in the Pacific, is longer but easier, having only twenty-eight miles of canal, of which three are tunnelled. The estimate of cost, including a total lockage of two hundred feet, is fifty millions; or by doubling the cost, as we understand the account, the summit level may be so lowered as to give only thirty-eight feet of lockage. The writer in the *News*, however, advocates a canal by the line of the Panama Railway, where, he says, the summit elevation would be only twenty-eight feet. By this route, however, the harbors are inferior; and in this respect the Cacarica route has an advantage over the others.

IT is also reported from Washington, that on the return of the Nicaraguan minister, Señor Berrard, negotiations will be at once entered into for the construction of an inter-oceanic ship-canal *via* Nicaragua, at a probable cost of sixty-six million dollars. The neutrality of this canal is to be assured by foreign powers on the general basis of the Clayton-Bulwer treaty. That an attempt to cut an inter-oceanic canal somewhere in Central America is to be made before long, there seems every reason to expect; for besides this Nicaraguan scheme, and the scheme of Señor Gogorza, — who is supported by the reports of India-rubber collectors, who confirm his statement by reporting a gap through which, even now, canoes are dragged from the Cacarica River, into the Paya, one of the tributaries of the Tuira, — the French, who may well be considered the knights-errant of engineering, have been considering the question in the recent *Congrès international des Sciences géographiques*, and have already appointed the members who shall form the French section of a general international commission, which shall make as vigorous and thorough a survey of the Isthmus as may be practicable. M. de Lesseps is the president of the French section. It is worthy of passing mention, that, some thirty years ago, MM. Garella and Courtines prepared a plan for a canal at the instigation of the French Government.

THE current number of the *Builder* tells briefly the story of M. de Lesseps' first survey of the Isthmus of Suez, and in so doing is led to tell several anecdotes of M. de Lesseps, for which he himself is authority. As one reads, the opinion forms itself perforce, that "The Suez Canal," by M. de Lesseps, in spite of the egotism and grandiloquence it is said to display, must be an entertaining as well as instructive book. "The National Gallery Pictures" is sufficiently characterized by its name. "The Minor Arts in France" asserts the right of lithography to an honorable place among the fine arts, a theme to which the writer has been incited by the award of first-class medals for lithography and engraving at the last *Salon*, which, though it has been done before, has always excited much opposition. "Characteristics of Mediæval and Modern Crafts and Craftsmen" is an historical research. "Free Thoughts on Art and Handicraft" takes the ground that a skilled craftsman is not so very inferior to an artist. One of the illustrations is the "New Theatre at Athens," which, by reason of the mixture of Greek, Roman, and Renaissance details upon it, shows that living surrounded by the remains of beautiful examples does not necessarily elevate and purify the taste. "A Ramble round Birmingham," in the *Building News*, shows that the "Brumagem" element is quite as strong in the architecture of the surrounding towns as it is in any of the goods there manufactured. "Sanitary Works Abroad" is a review of a French report of the commission appointed by the minister of public works to examine into the pollution of the River Seine; and attached to it is an account of the works in progress at Berlin for the sewerage of that city. "Kinematics" — a review of Reuleaux' "Kinematics of Machinery" — will probably interest only the mechanical engineer. The writer of "Archæological Superstition," in the *Architect*, writes of a lecturer in an English provincial town, who, while lecturing about the Great Pyramid, lately propounded, at much length, the theory that the Pyramid was not built as a mausoleum, but only to furnish a standard of measures to the world. It has been discovered that this, as well as the Ark of Noah, the Ark of the Covenant, the Tabernacle, and the Temple of Solomon, is designed on the system of the "sacred cubit;" and, as this contains just twenty-five English inches, one has only to read off its dimensions in inches to have the whole history of the Christian world laid before one on the convenient scale of one inch to the year. For example, at precisely 1,815 inches from the commencement of the "gallery of our faith" (so styled by the lecturer) is a rise in the floor. This measurement clearly indicates the date of the battle of Waterloo; and, as the rise is just 36 inches, it is suggested that the addition of these two measurements will give the date of the next important event in history, or that of the first International Exhibition in 1851. "The National Gallery" gives the history and description of the new additions to the National Gallery in London. Dr. Schliemann writes from Athens on the "Olympian Exploration." Our latest foreign exchange is a Russian architectural journal with an indecipherable name; fortunately, some of the numerous illustrations are printed with French as well as Russian titles.

BUILDING IN VIENNA.

IT is much to be regretted that the occasional publications of our Government are so slow in appearing as they are. Reports come slowly out long after the occasions to which they were due, and after the interest which would have given them freshness to the public has given place to others, perhaps even after the information which they contain has been made public through other means. The two reports of Messrs. Niernsee and Derby on Viennese building, prepared in connection with the Exhibition of 1873, have but just seen the light. The matter that is to be found in them, to be sure, particularly in Mr. Niernsee's careful study of the private dwellings of Vienna, is not too old to be of professional interest; but it would have commanded much more general attention if the report had been promptly published by the Government.

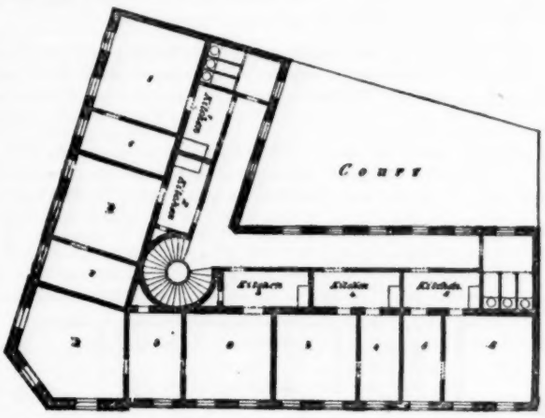
The architecture of Vienna has undergone a great change since, say, 1858. The old walls have been pulled away; and, as in many old cities, the space they occupied has been made to give a handsome continuous avenue or *boulevard* along their circuit. Their borders, become fashionable, have been built up with new splendor. But to the stranger the really impressive part of Vienna is the older part inside the *boulevard*, or Ring-Strasse as it is called. Here, in the better part of the town, devoid as it mostly is of really fine architecture, there is a certain air of grim grandeur in the lofty buildings that is very impressive, and sends the traveller away with a sense, not of cheer certainly, nor even of

elegance, but of a certain grand though gloomy dignity that he does not easily forget. The new architecture which surrounds the old, though richer and more elegant, is much less impressive. Half Italian and half French, it has neither the dignity of the one nor the grace of the other; and, in spite of its ornateness, is hardly cheerful. The wide and bare Ring-Strasse, hot in summer and windy in winter, and always dusty, has not the cheerfulness of Paris, and is, on the whole, not inviting to a stranger. The new Opera House, good in outline as it is, with much careful study and a good deal of grace in detail, lacks harmony, and continually shocks the sense of the critical observer by the looseness of its eclecticism, and the want of unity in its decorative treatment. This we say of its exterior; the interior is, we think, much more successful: we know, in fact, of no *foyer* that is at once so gracefully designed and so elegantly decorated; though it must be said that we have not seen the newly decorated interior of the Grand Opera at Paris.

The pamphlets before us are a "Report on the Construction and Embellishment of Private Dwellings in Vienna," by Mr. John R. Niernsee, F.A.I.A.; and a "Report on Architecture and the Materials of Construction," by Mr. Nelson L. Derby, architect, commissioners at the Exhibition of 1873. Mr. Niernsee's report gives, after a slight sketch of the topography and architectural growth of Vienna, a well-considered account of both the older and newer apartment-houses, which include there, as in Paris, the residences of almost all the population of every class, except the exceptionally rich and the exceptionally poor. To this he adds some account of the ways of building, and extracts from the building-laws of the city, and some remarks on its present architectural character. Mr. Derby's report busies itself more directly with building-materials and details of construction, and gives considerable practical information in a sketchy and somewhat loose way, with a variety of casual comments and suggestions for our ways of building in the United States. Mr. Niernsee's report is illustrated with a number of neat lithographs, which show the planning and arrangements of several Viennese houses.

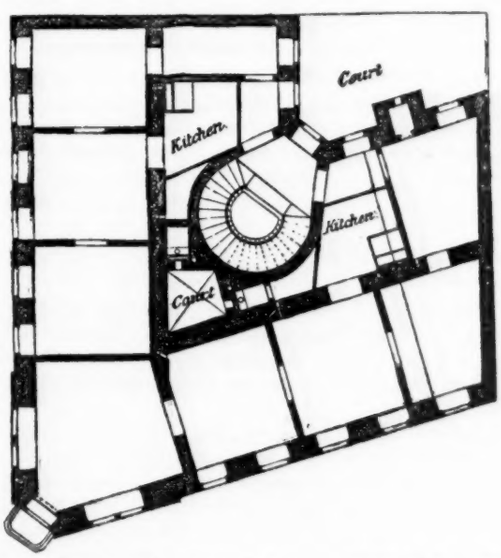
Vienna owes its apartment-houses in great part, no doubt, to the fact that it was surrounded by high walls enclosing no great area, which, as the city grew populous, must have for a long time crowded the inhabitants together. The walls remained, with their moat and its dozen bridges, long after the population had fairly outgrown their limits; and when in 1858 the present emperor removed them, and, as we have said, laid out the Ring-Strasse, the inner city contained but a small part of the inhabitants. But the Viennese retain their old habits, and are compactly housed in apartments; the whole population of seven or eight hundred thousand being even now included in an oval whose largest diameter is hardly more than three miles.

"The older houses of the city," says Mr. Niernsee, "date mostly from the eighteenth century; and some of them are immense; barracks we might almost call them, from their extent and the number of their tenants, some containing a dozen or so of inner court-yards, and one — Count von Stabremburg's mansion — holding upwards of fifteen hundred inhabitants. The old houses called *Zins-haüser* (*maisons à loyer*) were vast congeries of rooms let out in suites to suit the tenants; but owing to the crowded state of the city, and the expensive manner of building which the old laws prescribed, rents were so high that it was customary to live in the compactest possible lodgings. Hence even well-to-do business men with their families were compelled to content themselves with a suite of three or four rooms, kitchen included." The plan, figure 1, which we copy from Mr. Niernsee's report, shows the arrangement of one of these old houses, — a small one containing few rooms. The figures 1, 1, 1, 2, 2, 2, &c., of course indicate the rooms which are enclosed in a single suite; and a curious arrangement will be noticed, whereby the entrance to each suite from the common corridor is through its kitchen. Of these kitchens, Mr. Niernsee writes as follows: —



"The construction and contrivance of the generally contracted kitchen, particularly where a cook has also to find her sleeping-place in it, are really ingenious. A large portion, generally the back half of the kitchen, is devoted to the cooking, and is divided off by a beam or girder lying across from wall to wall (for all the partitions are of brick), about the height of the head, — say five and a half to six feet at most, above the floor, — from which beam the brick arching is turned up toward the ceiling, and the large open mouth of the chimney in the back, or so-called middle, wall of the house. By forming thus, as it were, a mantle or large hood over the range, — and the space within the cross or hearth beam is in the shape of the large kitchen-chimney of ancient castles and monasteries, — an excellent draught is created both for the fire, and for carrying off effectually all the odor of cooking. Their compact brick and plastered kitchen-ranges, with brass-bound curbs, and with no iron but the top plates, glazed earthen vessels for cooking, small stew-holes and ovens, — all wonderfully neat, compact, and effective, — are well contrived, and worthy of study and imitation. When the cooking is done, the fire is never kept up a minute longer than absolutely necessary. A curtain, sliding on rings on a rod fastened to the hearth-beam, is drawn close. No sign or smell indicate the presence of the cooking-apparatus. The floor is generally laid with hard stone or encaustic tiles."

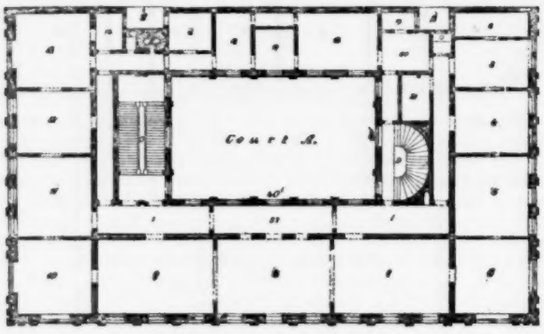
A floor plan of another small house, containing only two apartments on a floor, is shown in figure 2. It may be



noted that the peculiar nucleated arrangement of the streets in Vienna, of which one series radiates from the central parts of the old city, while another intersecting series is roughly concentric about the same focus, like a great cobweb, gives a great many oblique angles and irregular sites.

The later apartment-houses, built since the change of 1858, are much more spaciously planned; and some of them contain apartments of very great extent. As a contrast to the older plans we have given, we copy also a plan, figure 3, of the principal floor of the house of the banker Epstein, of which the description given is as follows: —

"This splendid dwelling, built on the Court Ring in 1871, contains in *souterrain* (sub-cellar) the stables of the owner, accommodating eight horses, and also for the tenant on the second floor, with room for six horses, with the necessary feed and harness rooms, an ice-cellar, and ample cellarage for fuel for all, and the heating-apparatus for the larger rooms of the owner. On the *parterre*, or ground-floor, are located the offices and counting-rooms of the owner, carriage-house and *concierge's* lodging, and a spacious decorated entrance-drive to the court-yard. On the first or principal floor are arranged the artistically decorated living-rooms of the proprietor, with Renaissance ceilings in stucco, fresco-painting and gilding by skilled artists, walls with scagliola marbles, costly and tasteful walnut wainscotings, and tapestries. The walls of the card-room are decorated with fine landscapes.



In the lettering of the plan, A designates the court-yard; B, small open courts for light and ventilation of private stairs, corridors, and water-closets; C, the rectangular grand stairway, which leads also to the second floor, and is highly decorated with variegated marble, scagliolas, and statuary; D, a second semicircular fire-proof stair, which leads to the second and third floors, occupied by one tenant on the second, and arranged for three sets of apartments on the third floor. A small oval private staircase, E, leads to the upper stories, and is principally used by the servants. The owner's lodging contains, No. 1, ante-room; No. 2, teacher's room; No. 3, sons' room; No. 4, library; No. 5, work-room or study of the owner; No. 6, card-room; No. 7, dining-room; No. 8, music or ball room; No. 9, reception-room; No. 10, boudoir; No. 11, family chamber; No. 12, nursery; No. 13, daughters' room; No. 14, governess's room; No. 15, baths; No. 16, wardrobe; No. 17, waiting-maid's room; No. 18, kitchen; No. 19, pantry; No. 20, waiting-room; Nos. 21, 22, closets; No. 23, winter-garden, or conservatory; and, besides, three water-closets. The servants' rooms are located in the *entresol*, or *mezzanine*."

A characteristic of the plan, which looks queer and obnoxious to an American eye, is the miserable provision made for the teacher and governess, who are relegated to two inner rooms of apparently about five by eighteen feet and six by ten respectively, each lighted only by one small window opening into the bottom of a deep well, perhaps five by eight feet.

The arrangement of the rooms *en suite*, so that some are inaccessible except through others, is one of the sacrifices of convenience to elegance at which Americans are apt to revolt, but which are preferred in Europe. We should think, at least, that the position of the proprietor's study was fixed with singular infelicity, unless a door is omitted in the plan.

The ground-floors of these great houses are commonly given up to business uses; the second story, called the *bel-étage*, contains the finest apartments; and between the two is often an *entresol*, or half-story, here called, after the Italian fashion, a *mezzanine*, which is used for servants' rooms and other subordinate purposes. Curiously enough, in the finest houses the basement is commonly occupied by the stables of the proprietors and the principal tenants. The building-laws forbid the use of the garrets for habitations. In another paper we shall give some further account of the practical provisions of the laws.

THE ILLUSTRATIONS.

HOUSE AT BEVERLY FARMS, MASS. MESSRS. E. C. CABOT AND F. W. CHANDLER, ARCHITECTS.

THE site of this house is on a rocky promontory in the woods, some distance from the sea, but commanding an extensive view of it. The house measures thirty-five feet by fifty-eight feet, and has in the second story six chambers with good closets, and a bath-room; and, in the attic, two bedrooms and a trunk-room. The inside finish of first story is to be of hard wood, dados and parquetry floors in hall and dining-room; the finish of upper stories to be of pine shellacked. The outside finish is clapboards on the first story, and shingles on the second; these shingles are Paul's machine-dressed cedar shingles, which, being of regular widths, give a good opportunity for decorative cutting, and are long enough to allow of eight inches exposure to the weather. The first story measures, in the clear, eight feet six inches; the second story, eight feet. The main hall measures fifteen feet by eighteen feet, and has an oriel window on landing of staircase. The house is double-plastered from sill to ridge. The contractors are Messrs. Phillips and Kelham of Manchester, Mass.

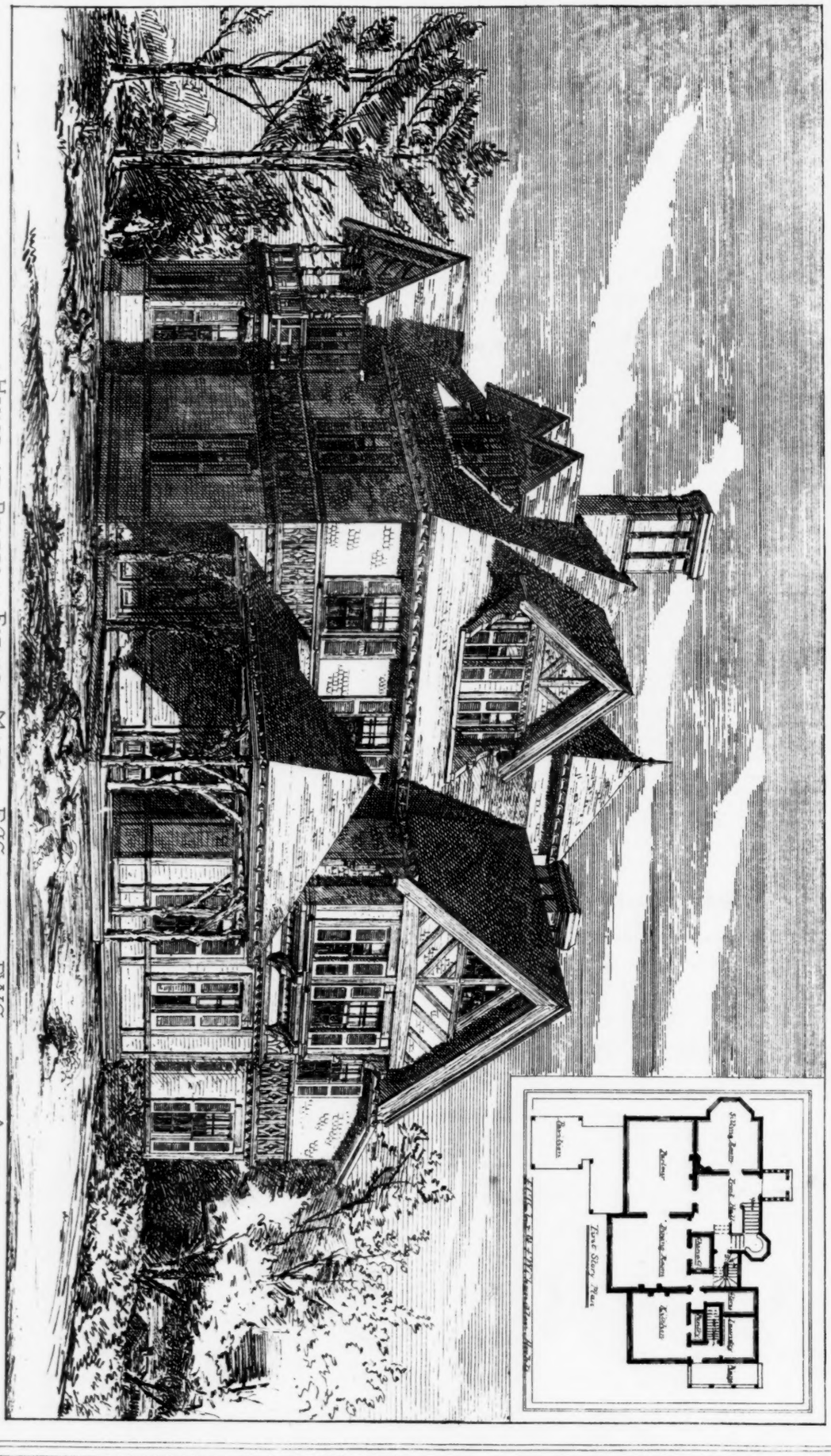
DESIGN FOR NATHANIEL T. ALLEN, ESQ. MR. JOSEPH T. CLARKE, ARCHITECT.

This house is to be built of gray granite rubble. As none of the stone is cut, brick will be used for the jambs of the windows and exterior doors.

THE JEFFERSON MEDICAL COLLEGE HOSPITAL, PHILADELPHIA, PENN. MESSRS. FURNESS AND HEWITT, ARCHITECTS.

CERAMICS AT PHILADELPHIA. — VI.

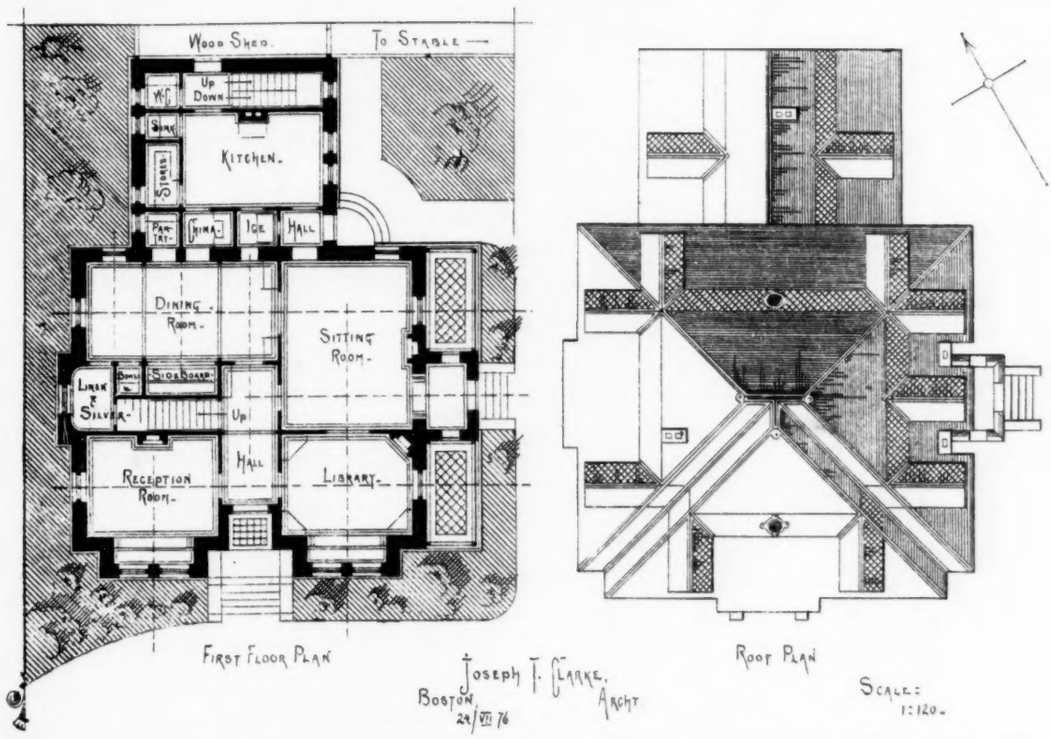
No stronger illustration could be desired by a vindictive enemy, of the barbarous taste which sometimes may overtake a people, and leave them wholly unconscious of their loss of artistic power and appreciation, than that which is afforded by an examination in detail of several among the French exhibits, and in particular of that in the stall of Haviland & Co. of Limoges. Three separate varieties of ceramic-ware may be seen; namely, porcelain (or French kaolin), *pâte-tendre* (or soft-porcelain), and faïence. The prominent display of pieces, the only possible motive of which is to feed the national vanity of our people, notwithstanding the statement is made by the representatives of the firm, that, with one or two exceptions, all the pieces exhibited are such, and only such, as every day are manufactured in the ordinary course, — the further statement, that the specimens although reserved for this occasion, and now for the first time presented to the public, have been selected less with a view of illustrating specialties in ceramics, than of showing the results of discoveries and improvements made in the past three years, will cause many intelligent observers to rub their eyes, and wonder if they are themselves broad awake, or only dreaming. The ordinary manufactures of Haviland & Co. must be presumed to be articles for table-use in *fac-simile* of those in the set "presented to Lady Washington in 1790 by the French officers;" and we are to believe that George and Martha Washington are eternally enshrined in the hearts and memories of the people of France! The "ordinary" character of the manufacture of faïence is illustrated, of course, by what are confessed to be the principal pieces in the collection, namely, two large vases commemorative of the Independence of the United States, and of the completion of their first century of existence as a nation, by twelve plates painted expressly for this exhibition in a style of which the distinguishing characteristic is that it was never previously attempted, — a method of description that surely applies with equal force to the panel-painting of one hundred tiles by Bracquemond, upon which the most fitting commentary that can be made is, that the world of art will lose nothing by its being never attempted again. Some good work is shown; but the entire collection loses effectiveness through the execrable design and decoration of the most prominent pieces. Take, for example, the *surtout de table* in uncolored porcelain, which is put forward as one of the triumphs of Gallic art. In this centre-piece a female figure presides over the service of the table; and artistic effect is sought by just lightly smearing gold on the projecting lines of the dress, where the limbs give them special prominence. A grosser outrage against every canon of art could not be devised, though years should be spent in the effort. Yet such objects as this are unblushingly asserted to be the grandest achievement of ceramic art in France. Another



HOUSE AT BEVERLY FARMS · MASS · E.C. CABOT AND F.W. CHANDLER · ARCHTS ·

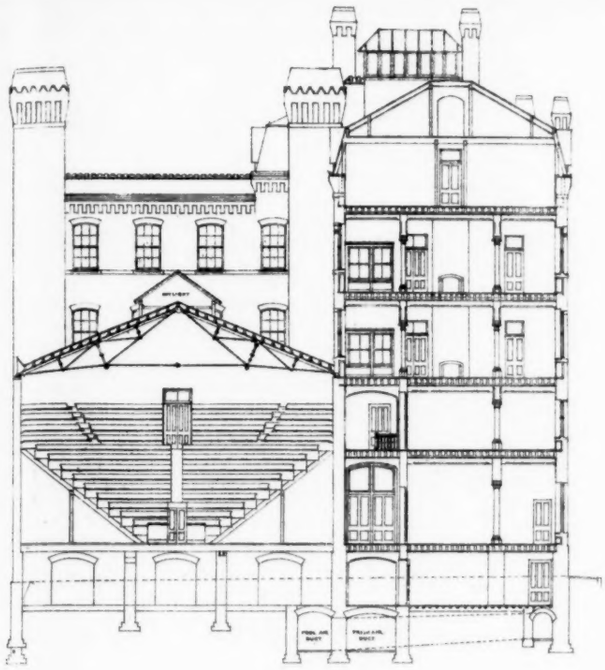
JAMES R. OSGOOD & CO. BOSTON

DESIGN FOR NATH'L T. ALLEN, ESQ., MEDFIELD, MASS.



HELIOTYPE JAMES R. OSGOOD & CO. BOSTON

THIRD FLOOR
PRINCE
FRANK FURNESS, ARCH'T.
JAMES R. OSGOOD & CO. BOSTON



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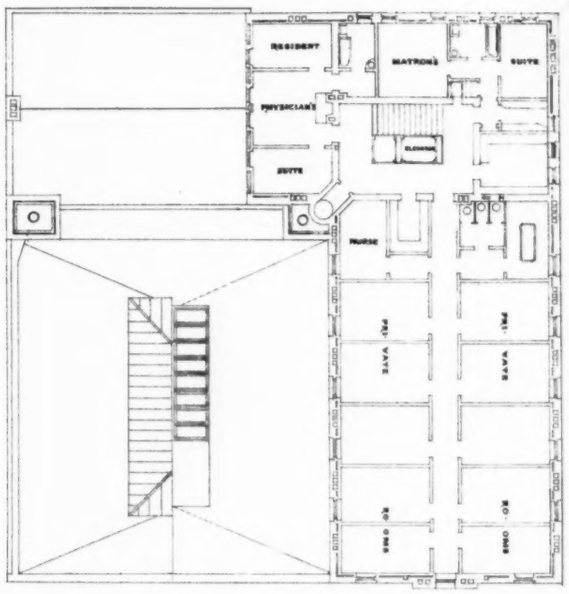
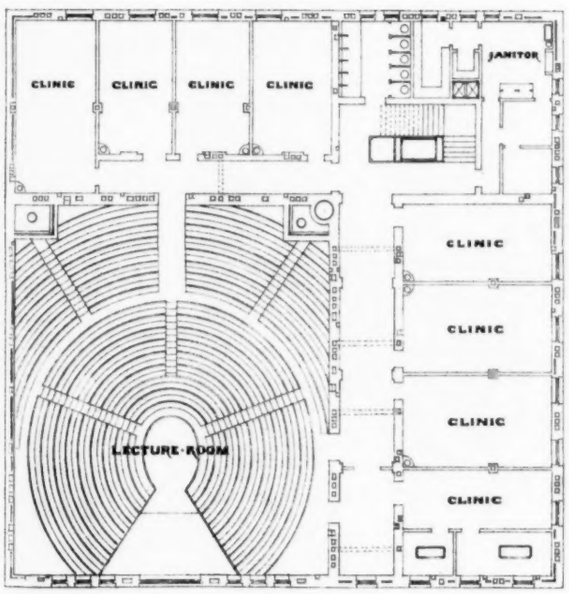


PLAN · OF · FIFTH · STORY

JEFFERSON · MEDICAL · COLLEGE · HOSPITAL

PHILADELPHIA · PENN:

FURNESS & HEWITT · ARCHITECTS



PLAN · OF · SECOND · STORY

THIRD · AND · FOURTH · STORY

HELIOTYPE

JAMES R OSGOOD & CO. BOSTON

Limoges exhibitor, Charles Field Haviland, making no pretence to stand at the head of the manufacture of French porcelain, goes very far in the direction of redeeming the credit of France, by the production of high-class works and some specialties, which may also be found more or less successfully represented by one or two other exhibitors at the exhibition. The feature which here attracts the eye insensibly is the manner in which colors are laid on platina, with which in some cases portions, and in other instances the whole surface, of the clay is covered. Plates have platina borders, edged with gold and decorated with flowers. The more precious metal is fused with alloys, and can then be put upon the porcelain body ; and the modified brilliance of the covering, which may take rank between highly polished and oxidized silver, takes the colors painted by a dexterous hand, and gives them an enhanced beauty that is evidence, even to an untrained eye, of the fitness of the decoration. The superior softness of the colors, which seem to have a natural affinity for the material upon which they are painted, is due in part, perhaps, to the chemical fusion of lead in their composition ; and the excellence of the finished wares is attributable to the use of wood only for fuel in the Limoges kilns. Plates, *plaques*, and vases are thus treated with surpassing skill. Some fruit and leaf centres, notably blackberries and their leaves, are exceedingly effective upon plates ; and paintings transferred over glaze on vases, etc., have all the minute delicacy of fine photographs touched by the pencil. The *pâte-dure* alone is capable of being treated in the manner of Charles Field Haviland's porcelain. Each separate color calls for a separate firing; and where platina is employed for surface-coloring, the heat up to which the firing is carried is almost incredible. Every distinct firing tends to weaken pottery, and commoner and coarser clays would flaw in the kilns under the heat to which the Limoges ware is subjected.

Effects that are as beautiful may be seen in the *étagères* of Kaffel Frères of Paris. These articles *de luxe*, borne by pillars of gold bronze, are very choice; platina and colors being richly and not too lavishly applied in the subject decorations, which generally consist of flowers and birds, a set study being in some cases well painted. The *gros* blue, that in several objects forms the groundwork of the subject-painting, is clear and definite, never varying in tone ; and so perfect is the illusion of transparency, that it is difficult to discredit the fantasy until a hand has been passed beneath, with a view to testing the judgment of sight. De Ligny of Sèvres is the artist to whom belongs the credit of much of this fine work, as well as that of two choice vases, bearing subject illustrations of "Music" and "Painting" in modern style, which affords a not unwelcome change from the almost perpetual striving after mythological conceptions.

The Royal Porcelain Manufactory of Berlin alone represents the higher forms of ceramic art as it is pursued in Germany, and in which a considerable degree of excellence was shown in the works sent to Paris in 1867. The last great war, which has materially contributed to the decadence of French art, has not suffered the victorious nation to pass unscathed. The material and the workmanship of the German imperial porcelain are both unexceptionable : the decoration is, however, very frequently a misnomer. Portrait-heads of Kaiser and Chancellor, and illustrations of the feudal castles of the Rhineland, etc., are the controlling forms which alone seem to please the German people, and are presumed by them to possess as deep an interest for other races. Hero-worship may be carried too far. To a wiser and more reflective generation these paintings will assume the aspect of artistic blunders. The business of war has been too absorbing to allow any attention to be given to the improvement of ceramic art ; and accordingly Germany teaches no lesson of progress to the rest of the world.

Turning to the English section, we notice, in the exhibit of Brownfield & Son of Cobridge, a new color, discovered by Arthur Brownfield. The material of which some lamps are made is fine porcelain; but the majority of casual observers would certainly say that it is ground-glass, bearing a decorative treatment with color and enamels. The illusion of semi-transparency tricks the eye, until it is caught by a side-light, when a rich and soft satin-gloss discloses the presence of color, and careful examination shows, further, the presence or the semblance of silver fused in the surface-pigment. The decoration of flowers and butterflies upon this silver ground is highly artistic ; and the colors have as close an affinity to the ground and the body as already has been remarked in the platina surface of the Limoges porcelain of C. F. Haviland. Of the two modes, or processes, of decoration, it is difficult to decide between the beauty of the two ; but the silver ground, being far less costly and of equally chaste effect, is not unlikely to achieve the widest popularity wherever wealth and discrimination go hand in hand.

REPORT OF MEETING A. I. A.

AT the meeting of the Board of Trustees held Aug. 17, 1876, after the transaction of executive business, the following members were elected by ballot: J. R. Thomas, Rochester, N.Y., Fellow; A. T. Goshorn, director General Centennial Exhibition, Honorary Member; George Beach, Hartford, Conn., Honorary Member.

A number of communications were read. A member of the Board was appointed a committee of one to make inquiries, and report to the Board, on the strictures on a recently elected member contained in one of them.

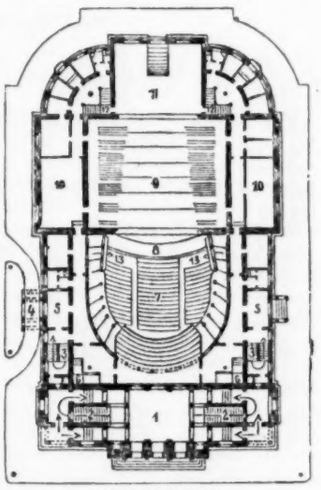
One of the communications was from Mr. James B. Cook, Fellow, of Memphis, Tenn., offering to members of the Institute copies of his recently published volume on prisons and penitentiaries.

The Secretary of the Committee of Arrangements for the Tenth Annual Convention reported progress.

The receipt of a pamphlet from Mr. W. L. B. Jenney, showing his connection as Professor of Architecture with a school of architecture in Michigan University, was also reported.

THE THEATRE AT PESTH.

THE long existent desire of the people of Pesth for a popular Hungarian theatre led in the year 1873 to the formation of a committee under the direction of the Baron Bela Lipthay. As site for the building, the city presented a lot on the Herminenplatz. Soon afterwards arose the question of the construction of a royal opera-house; and as a suitable site for it was lacking, an arrangement was made by the Minister of the Interior with the building committee of the proposed theatre, by which the latter ceded the site on the Herminenplatz in consideration of the sum of five hundred thousand florins ($250,000). Shortly afterwards a new site of about three thousand square metres was obtained on the Kerepeserstrasse; and in the fall of 1873 the Messrs. Fellner and Helmer were intrusted with the work.



MAIN FLOOR PLAN.

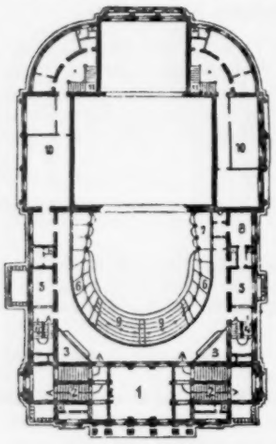
1. Vestibule.
2. Stairs to gallery.
3. Stairs to boxes.
4. Porte-cochère.
5. Vestibule of stairs to boxes.
6. Stairs to the pit.
7. Auditorium.
8. Orchestra.
9. Stage.
10. Green-room.
11. Rear stage.
12. Stairs to stage.

The programme demanded an auditorium for twenty-five hundred persons, separate stairs for the galleries and for the boxes, a spacious vestibule, with the necessary entrances and exits, and a stage which should be in proportion to the auditorium, with the necessary green-room and dressing-rooms. In the original design the theatre was placed with its front on the boulevard; moreover the breadth of front was enlarged by pavilions on either hand, to be used as café and restaurant. This design had to be abandoned, since it called for more money than was at the disposal of the committee. It was at length determined to suppress the side pavilions, and turn the building so as to face toward the city. The execution of this design was begun in March, 1874.

As there was only the comparatively small sum of six hundred thousand florins ($300,000) to carry out the scheme, it was determined to decorate as little as possible, without, however, doing dishonor to the vestibule and stairways, or neglecting the rich upholstering of the retiring-rooms which are situated on each floor.

The arrangement of the auditorium differs from that of most European theatres in that, taken on the longitudinal axis, each gallery, of which there are three, retreats seven feet from the front of the one immediately below it. This arrangement displays the audience to great advantage, since from every seat the spectator can overlook the whole. Sloping the floor upwards gives a larger

angle of vision, and a more pleasing optical effect. Finally better ventilation is secured for the galleries, since most of the seats have a free space overhead, and comparatively few lie under the overhanging galleries. The galleries and tribunes are built of wood, and rest on iron columns. The ceiling, made in fan-shaped sections, is hung to the frame-work of the roof. The prevailing tint of the theatre is white relieved with gold. The lighting is by a lustre of some two hundred and sixty jets. It is warmed by hot water, and ventilated by forcing in air. Tanks of wrought iron are placed on the roof, and pipes laid throughout the building. There are 914 fixed seats, 489 folding seats (*sperrsitze*), 48 boxes, including the court and proscenium boxes, and eight hundred standing places; making a total accommodation for twenty-four hundred spectators. The façades are covered with hydraulic mortar; the ornamental sculptures are in moulded cement; the main frieze is executed in cast zinc; the figures on the attic, as well as the group which crowns the front gable, are in stone; the sculpture in the tympanum, representing an assembling of the gods, is in moulded cement. Over the windows of the first story of the main building are niches with busts; and on the sides between the windows of the second floor are *sgraffito* figures of playing genii. The theatre was opened Oct. 15, 1857, in the presence of the Emperor.



GALLERY PLAN.

1. Grand foyer.
2. Stairs to gallery.
3. Public dressing-rooms.
4. Stairs to boxes.
5. Small foyers.
6. Boxes.
7. Court-box.
8. Saloon to court-box.
9. Balcony seats.
10. Artists' dressing-room.
11. Stairs to stage.

We are indebted to the *Deutsche Bauzeitung* for the above description and accompanying cuts.

CORRESPONDENCE.

THE STONE CONTRACTS FOR THE COUNTY COURT-HOUSE. — NEW SUPERINTENDENT OF BUILDINGS.

CHICAGO.

THE attempt to defraud the tax-payers of Cook County in awarding the cut-stone contract for our Court-House is one of the most remarkable and barefaced acts in the whole history of ring rule. Before the plans for the building were fully adopted, the Board of County Commissioners adopted a resolution that none but Cook-county stone be employed in the erection of the new building. The plans were accordingly made, showing larger stones than the quarries, with one exception, could produce. This exception is the quarry of Edwin Walker at Lemont. The stone of the Cook-county quarries is all a white magnesian limestone, in horizontal strata of varying thickness; but it is generally of the same quality. Of course there is a variation in the thickness of stones that can be produced from the different quarries; and when each of them can produce the stone required for any particular purpose, there is good opportunity for getting competition. In this case, however, it was evident that there could be no competition, and the Commissioners concluded that the fraud might be too easily discovered; so by subsequent action they concluded to advertise for proposals for any kind of stone that might be offered. Accordingly a large number of bids were received, covering almost every material that could be mentioned; and they ranged from $400,000 to $800,000. One bid for granite was nearly $1,000,000. Having shown the public how exceedingly fair they were, and taken free excursions all over the country at the expense of the several proposers, for the ostensible purpose of examining stone, the Commissioners proceeded to business.

The first thing they did was to return to their original choice, and pass a resolution to adopt Cook-county stone. The award could thus be made only to one of those proposing to furnish this material. The lowest bid was from Patrick Fanning, for $535,000; the highest from Edwin Walker, for $695,000. Walker proposed to use his own stone: he is a quarry-man, and sells stone at regular prices to all the stone-yards. Fanning is a stone-cutter, and buys stone from all the quarries. There is so little difference between the Cook-county magnesian limestones, that they can be used together in the same building without destroying uniformity; but the trick in the advertisement was that all the stone should be from one quarry. On the plea that Walker was the only man who could furnish all the stone, large and small, from one quarry, the Building Committee voted him the contract; but, before it had come up before the Board for confirmation, the defeated contractors united in an effort to prevent action, and had injunction papers ready to serve. The Board, getting wind of this, deferred all action at this meeting. At the next meeting the committee, when foiled in its attempt to give Walker the contract, passed over the lowest bid again, and took up the next bid, that of Mr. McNeil & Son, for $540,000. The committee had meanwhile insisted that the contractor must give a mortgage upon the quarry from which the stone was to be procured, as security for the performance of the work. This Fanning could not do, though he offered undoubted bondsmen for the faithful performance of his contract; but when McNeil was called on he was instantly seconded by Walker, who offered a mortgage on his quarry to secure McNeil. This made it evident that Walker had made an arrangement with McNeil in order to keep Fanning out, because Fanning intended to get the most of his stone from the Illinois Stone Company. The award to McNeil was made in face of the open protest of Mr. Burdick, one of the Commissioners, who in a long speech exposed all the machinations of the ring.

McNeil is not a stone-cutter, but a mason, and is rather notorious for throwing up bad contracts. He has little or no reputation as a contractor. Patrick Fanning is one of the most reputable men in the stone-cutting trade, and a man of large experience. The attempt of the ring to deprive him of the contract has aroused for him a host of friends, even among his competitors in business. Walker is a man heavily in debt, against whom there are said to be many judgments, while his quarry is already mortgaged for all that it is worth.

No sooner was the award made to McNeil, than a curious discovery was made. It was no less than the existence of a contract between Patrick Fanning, William McNeil, and Patrick M. Hennessy, dated the 23d of May, 1876, which formed a co-partnership between the three parties to take the contract for the cut-stone work of this very building, provided a bid to be offered for the work should be accepted, and the contract awarded. From Fanning's explanation of this, it seems that McNeil and Hennessy urged him to join forces with them before the Commissioners advertised for proposals; and he complied. The contract was the result. Fanning represents also that McNeil was to make the bid for the firm at five thousand dollars above Fanning's estimate. This was done; and it appears, consequently, that McNeil, who is now trying to get the contract for himself and Walker, never made any estimate, as he could not, he not being a stone-cutter. Fanning also says that McNeil now repudiates the contract with him, preferring to trust his fortunes with the ring-men and those who are backing up Walker. The association with McNeil does not look well for Fanning, and shows at least that he has poor judgment in choosing partners.

The matter is not yet consummated; for at the meeting of the Board, held on the 22d, the committee failed to get their report accepted. Some of the Commissioners made a determined fight against it, and it was postponed. What gives this contest a peculiar interest is, that the contract covers only half of the building which is to be erected; and as soon as the County agrees to erect the City-Hall half, which will be similar in exterior, the contract will undoubtedly be doubled. In addition to this, the dome is yet to be provided for; and there will be two connecting arcades between the ends of the City and County buildings. The prospect for extras is simply immense; and with such a body as our present County Board to deal with, there is no doubt that the opportunity will be improved to the manifest profit of all parties concerned.

At the last meeting of the City Council, Mayor Heath sent in the nomination of H. D. Cleaveland as Superintendent of Buildings. The nomination of Mr. Cleaveland is one of the wisest moves of our new city government. He is one of the leading architects of this city, an associate of the Institute, and a man of undoubted integrity, with every qualification needed for the office. He has not sought the position, and it is yet doubtful if his professional engagements will permit him to accept the office without a personal sacrifice. He will doubtless be confirmed, as there are in the Council many of those who appreciate the advantage to the City of having a professional architect filling this position. It so happens that the building trades, and the architectural profession, are singularly well represented in our city government. Monroe Heath, the newly elected mayor, is head of the firm

of Heath & Milligan, our largest contractors for house-painting, and manufacturers and wholesale dealers in paints. The Chairman of the Building Committee of the Council is John M. Van Osdel, who is the oldest architect in the city, — a gentleman of the old school in every way, but a man of energy, not unmixed with impulse. Among other members are Henry Kerber, one of our leading cut-stone contractors, and Messrs. Ballard and Waldo, both well-known lumber-men.

HOW TO LOWER A HIGH TEMPERATURE IN DWELLINGS.

THE suggestion which follows is not now broached for the first time. It has in England received extensive currency by quotation from the pages of *Public Health*. But America, with its continuously scorching heats, affords a wider field for its adoption. Its author has patented, and intends to patent, nothing in pursuance of his idea: he would like, however, to see something done; and those who attempt to give effect to it might perhaps pay him the compliment (if they can reach him at the time) of forwarding for his own use some not too costly specimen of pottery or ironwork, designed for the purpose, in acknowledgment for an idea by which they may freely profit.

During the excessive heat of summer, when sitting within doors is but one degree less uncomfortable than walking at a moderate pace out of doors, it may be useful to bear in mind a very simple application, — practicable by any one, — of a natural law, which will enable a professional man to read, write, design, etc., without inconvenience from the heated atmosphere, and without shutting off the light which is indispensable to him. Any person who has passed through a floricultural show, a public aquarium, or a building like the Crystal Palace at Sydenham, or the Main or Machinery Halls of the Centennial Exhibition at Philadelphia, must have noticed how gratefully cool the atmosphere always is in the immediate neighborhood of playing fountains. In the Centennial grounds, where no shelter could be had from a scorching heat that must have been higher than a hundred and twenty degrees Fahrenheit, one needed but to pass between a couple of closely contiguous fountains to find a delightfully lowered and extremely pleasant temperature prevailing there. Just the same effect may be produced in a sitting or study room, without the expense of fountains. A basin or dish, large enough to present a good surface, filled with water, and placed on the centre of a table in the forepart of the day, is amply sufficient for the purpose. The writer has even found in London that an ordinary glass tumbler full of water, renewed once after noon, has been potential enough when he has sat all the day in a small study, engaged in professional work, on the hottest days of four years, when the thermometer occasionally registered a hundred and eight degrees in the shade. The hot air takes up the water in the form of atmospheric vapor, and, enacting in little the part of the clouds, diffuses the greater coolness of the water throughout the room, until both air and water are at the same point; when that is attained, if the heat of the day be not spent, the water needs renewing. Of course, little depends upon any specific form of vessel, provided it be widest at the top. It may be plain, or it may be ornamental; it may take the guise of a table decoration; it may be — this hint is for the ladies and for artists — a species of well with a flower-vase or jardinière springing from or planted in the centre, whose welcome perfumes shall be borne together with cooling influences by the vapor-charged air. There is only one condition imperative, namely, that free contact of air and water over the entire surface of the latter be not obstructed. The committees of the Corporation of London sit in each case around a table on which a huge toilet basin filled with water is placed; and they do not find that any discomfort ensues from hot weather, though it would else be all the hotter from the debates that take place.

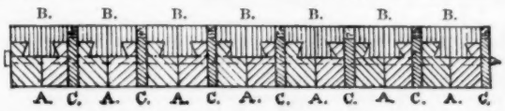
Against hot winds there is another remedy, often adopted in the East Indies and by old Anglo-Indians, applied at Norwood, Highbury, and elsewhere. The veranda or railing a few feet from the house windows, which are left open, is covered with a curtain of stout canvas or matting; and a pail-full of cold water is thrown against the improvised curtain. The winds in passing through the curtain to the house interior take the temperature of the water, and are instantly cooled to a positively refreshing degree. Any one who is familiar with Spanish mats will at once identify the kind of fabric which for this purpose is best. In London this is woven in striped or decorative patterns, in cheerful colors; and the use of such material would therefore not disfigure the lawn-front of a private mansion.

J. T. D.

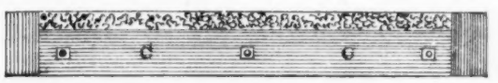
CANADIAN NOTES.

THE Dominion Government have adopted for use a new wooden pavement, of which they are laying down about one thousand five hundred and sixty square yards in the Parliament Grounds as sidewalks. The principal recommendation is the fact that it can be brought on the ground in sections. The cost to the Dominion Government is about one dollar and a half per yard (super). Some three dozen of sections were laid in experiment, nearly two years ago; and these have proved themselves good beyond expectation.

The sections are, in the present case, six feet long by four feet wide and six inches thick. They are of good size and shape for dipping into pans of hot tar, and then are in the best state for laying down. These sections are formed of under-bearers, or scantlings (A), blocks (B), intermediate slips (C), and iron fastening



bolts. The scantlings are six feet long, four inches wide, and two inches thick, rebated on one of their upper edges; two of these scantlings being placed together, as shown, and divided from the neighboring pairs by wood slips (C), one-half an inch thick. The blocks (B) on top of scantlings are two inches thick by three and a half inches long, rebated to form a dovetail with the scantlings. The slips (C) are two inches narrower than the united depths of



block and scantling, to leave a space for tar and gravel, or tar and sand filling. The sections are fastened together by wrought-iron bolts with heads, washers, and nuts. These bolts are pointed on ends, and are five-eighths of an inch longer than the width of a section. It would appear to be an admirable style of pavement for railway station platforms, warehouse floors, or any position where there is a large amount of traffic.

THE SCOTT-MONCRIEFF STREET-CAR.

BOTH economy and humanity have long since pointed to the necessity of discontinuing the use of horses as the locomotive power for street-cars. Inventors first contrived dummy-engines, which under certain conditions have admirably served the purpose. Further study and experiment resulted in smoke and steam consuming engines, running swiftly and easily, of great power, and occupying, when attached to the ordinary street-car, less length than a pair of horses. The most successful of these engines are those invented by the Messrs. Merryweather of London, which sustained successfully a prolonged trial upon one of the street-railroads which sprang up last year all over Paris. Chemical engines have also been conceived. Later, a French engineer, M. Leveaux, invented a street-car propelled by strong springs. This, too, has been tried in actual service; but as the invention is subject to the inconveniences of stopping once in every two miles, — although three miles can be run at the rate of six miles an hour, — to have the springs rewound, and of running more slowly as the spring is more nearly unwound, it is considered to be as yet inferior to the dummy-engines. A third invention, which is also subject to the inconvenience of losing speed as the power exhausts itself, is that of Mr. Scott-Moncrieff, who uses compressed air as his motor. A car so propelled has been used successfully for more than two months on a street railway near Paisley, in England, under every condition of traffic and weather, performing a trip of three miles for each charge of air, — when the rails are not slippery with mud or ice, a considerable surplusage of air is left in the tanks, — at a cost of about one cent a mile.

NEW SAFETY-LANTERN. — In Paris, night-watchers of factories and warehouses containing highly combustible material are supplied with a peculiar lantern. A piece of phosphorus about the size of a pea is introduced into a glass flask, which is then one-third filled with boiling olive oil, and closed air-tight with a cork. When light is desired the cork is simply removed for an instant to admit the air, and a clear light is emitted from the empty space in the flask. The intensity of the light when it diminishes may be renewed by admitting air again. A lantern thus prepared, it is said, may be used continuously for about six months without the least trouble.

NOTES AND CLIPPINGS.

STONE FOR THE CHICAGO COURT-HOUSE. — Mr. H. D. Garvey, owner of the Watob Granite Quaries near St. Paul, Minn., desirous of introducing these quarries to the building public, offers to give sufficient stone for the erection of the Court-House. The stone, a fine gray granite, can be delivered in the rough at Chicago for thirty-five cents per cubic foot. This includes the cost of quarrying and transportation.

NEW YORK STONE-CUTTERS. — It is to be feared that the New York stone-cutters will be encouraged in their late high-handed proceedings by an agreement recently completed with more than two hundred of them, who are to be employed in Scotland on a two-years' contract.

SYNAGOGUE. — The new Jewish Synagogue on Keap Street, Brooklyn, is nearly completed. It is one hundred by fifty-four feet in extent, and cost fifty-five thousand dollars.

THE FRANCO-AMERICAN STATUE. — The cost of the Franco-American statue of Liberty is estimated at about one hundred and twenty thousand dollars, of which one-half is already collected.

BOSTON FIRES. — This record of the number of fires and the amount of losses is taken from the New York *Evening Mail*:—

NUMBER OF ALARMS.

May, 1873, to 1874, ...	720, including 233 stills.
May, 1874, to 1875, ...	702, including 244 stills.
May, 1875, to 1876, ...	483, including 140 stills.

TOTAL LOSS ON BUILDINGS AND CONTENTS.

May, 1873, to 1874, ...	$3,430,282.50
May, 1874, to 1875, ...	1,228,403.00
May, 1875, to 1876, ...	541,272.00

TOTAL INSURANCE ON BUILDINGS AND CONTENTS.

May, 1873, to 1874, ...	$3,443,740.75
May, 1874, to 1875, ...	3,677,008.00
May, 1875, to 1876, ...	3,076,483.00

CHURCH OF THE ANNUNCIATION. — The Church of the Annunciation, situated at the corner of Paulina Street and Waubansia Avenue, Chicago, was dedicated recently. It is built of pressed brick, with limestone basement and trimmings. Its exterior measurements are a hundred and sixty-five by seventy-five feet; and in the centre of the front is a square tower surmounted by a spire. A smaller spire rises from each of the front corners. The main spire is surmounted by a large gilded cross. The walls are braced with buttresses capped with limestone. The pews will seat twelve hundred persons. Over the main entrance is the organ-loft. There is a large doorway at each side of the church, furnishing easy means of emptying the building. On each side of the church are six mullioned windows of stained glass, all of which are private donations to the church. The ceiling follows the roof nearly to the ridge, and is supported by exposed woodwork. The altar is composed of black walnut, with butternut panels, richly decorated with ornaments of pure gilt. In a niche in the centre, and about eight feet from the base, is a large statue of the Annunciation of the Blessed Virgin, with a small figure of an angel on either side at the base. Immediately on the right and left are life-size statues of St. Bridget and St. Patrick, while over the Virgin is a statue of the Good Shepherd. The altar is in the pure Gothic style, thirty-five feet six inches high, and fourteen feet wide. The panels of the half-dome over the altar are blue, and on them are painted the figures of angels. In the front of the sanctuary, at the extreme right and left, are the altars of St. Joseph and the Blessed Virgin. The entire cost of the structure and the fittings is fifty thousand dollars. The altar was erected at a cost of about two thousand dollars.

WAGES. — The New York *Commercial Advertiser* gives the following comparative list of wages at present and in 1870: —

Trade.	1870. Wages per Week.	1876. Wages per Week.
Bricklayers	$27 to $30	$21 to $24
Brown-stone Cutters	27 " 30	21 " 24
Carpenters	21 " 27	18 " 21
Gas and Steam Fitters	21 " 24	18 " 21
Lathers	27	24
Masons	27 " 30	21 " 24
Plasterers	24 " 30	21 " 24
Plumbers	18 " 24	15 " 21
Roofers, tin	15 " 20	15 " 18
Roofers, slate	24 " 30	18 " 24
Stairbuilders	21 " 27	18 " 24

FLAT ROOFS AS PLAYGROUNDS. — Dr. Wilberforce Smith read a paper recently before the British Medical Association in Sheffield, advocating the use of flat roofs in the cities as playgrounds for children.

THE ENGLISH JOURNALS. — A correspondent, who writes with the assurance of one who knows whereof he speakes, states that the circulation of the *Builder* exceeds that of the *Architect* by over six thousand copies, while it is itself outdone by the *Building News*, which has a circulation larger by fifteen hundred copies.

GRAND PRIX D'ARCHITECTURE. — M. Blondel has received the Grand Prize annually offered by the *Académie des Beaux-Arts*. M. Blondel, a young man twenty-nine years of age, the pupil of M. Daumet, has in all probability pursued his studies at the *Ecole des Beaux-Arts* for the last ten or twelve years.

THE TUILERIES. — The commission recently appointed by the Senate to examine into the advisability of reconstructing the Tuileries have thought best, while expressing the desire to see the palace preserved as far as may be, to request the Senate to refer the question to the minister of public works.

LIGHT-HOUSE AT CEYLON. — The stone for the lighthouse on Great and Little Basses Rocks, Ceylon, was cut and fitted in England, and then transported to Ceylon. A noticeable fact connected with the erection of the lighthouse was, that the steam-power of the vessel that carried the stone was used to lift the blocks to their places; and that the stones were moved from the vessel to the rocks through the water, in order that the buoyant force of the water, affecting the specific gravity of the stone, might lighten the labor.

TRADES-UNIONISM. — A novel case has arisen in Canada, under the laws regulating Trade-Unions. A stone-cutter in Montreal, who did not belong to the Stone-Cutters' Union, accepted work from a firm employing Union hands, but at less rates than the Union allowed. The Trade-Unionists then, by threatening a strike, compelled his discharge. The stone-cutter has sued the Trade-Union, which is a regularly incorporated body, for actual and prospective losses caused by its action, and has laid his damages at one thousand dollars. He has engaged eminent counsel, and expects to pursue the suit vigorously. The Canadian law is very stringent on the subject of strikes; and it gives an aggrieved party the right to proceed both civilly, as is here indicated, for damages, and criminally by charging a conspiracy to injure him.

WAGNER'S THEATRE. — The stage of the Bayreuth Theatre required 3,247 gas-jets. The rising mists and gathering clouds needed for scenic effects were produced by two large engines placed at a short distance from the theatre, whose steam was carried by pipes to a reservoir, from which it could be distributed by a network of tubes over the whole stage. In the corner towers of the theatre are two cisterns, each holding about 1,200 gallons, from which water can be obtained at a very high pressure in case of need. The gas and water works of the theatre have cost $30,000.

SWEDEN ADOPTS THE METRIC SYSTEM. — The Swedish Parliament has recently passed a bill looking to the general introduction of of the use of the metric system, which for many years has been used by the physicians and physicists, and for the last three years has been employed at the Mortala Iron Works.

ROMAN EXHIBITION OF ASBESTOS. — An interesting exhibition has just been organized at the Simonetti Palace, on the Corso in Rome, of a fire-resisting silicate of magnesia. This display of asbestos is in all the stages through which it passes, from the time it is taken out of the earth until it appears as a manufactured article. The ancients had a means of weaving it, and with it made napkins for meals, wicks for lamps, and winding-sheets for the dead for purposes of cremation, so that the ashes of the deceased could be collected unmixed with those of the wood which had formed the funeral pyre. The process of working this textile, has been re-discovered by the Marquis de Batrera, as well as the means of making with it incombustible paper and cardboard at a low price.

TENSILE STRENGTH OF CEMENT. — *La Compagnie du Gaz Parisien*, previous to constructing some large gasometers near Paris, experimented on the different materials to be used in their construction; among others, on the cement which was to be used for the vertical walls of the reservoirs (*cuves*), with the following results. The cement used was Portland cement of Pouilly in Burgundy. It was found that a brick of pure cement six weeks old, which had been kept in water during that time, broke under a tensile strain of one hundred and seventy pounds to the square inch (twelve kilogrammes per square centimètre); that a brick six months old, which had also been kept under water, broke under a strain of four hundred and forty-one pounds to the square inch (thirty-one kilogrammes per square centimètre); that cement hardens more rapidly when exposed to the sunlight and fresh air, than when affected by humidity; but that this is at the expense of the tenacity and impermeability of the product, hence masonry walls should be sprinkled regularly until the cement has set; that the degree of fineness has an effect on the setting of cement, and consequently upon its ultimate tenacity, for it is a rule that the tenacity is in inverse proportion to the rapidity of the setting; that a mortar made of two parts sand to one of cement broke under a strain of two hundred and seventy pounds to the square inch (nineteen kilogrammes per square centimètre), while a mortar of equal parts of sand and cement broke under a strain of four hundred and twenty-seven pounds to the square inch (thirty kilogrammes per square centimètre). The effect of sand upon the shrinkage was shown by the facts, that pure cement was defaced by cracks a little more than a foot apart; when mixed with equal parts of sand the cracks were a little more than a yard apart; when three parts of sand to one of cement were used there were no cracks at all: hence it was this mixture that was used in constructing the reservoirs.

NAILS. — The origin of the terms "six-penny," "ten-penny," etc., as applied to nails, though not commonly known, is involved in no mystery whatever. Nails have been made a certain number of pounds to the thousand for many years, and are still reckoned in that way in England; a ten-penny being a thousand nails to ten pounds, a six-penny being a thousand to six pounds, a twenty-penny weighing twenty pounds to the thousand, and having just one-half the number of nails to the ten pounds of the ten-penny; and, in ordering, the buyer calls for the three-pound, six-pound, or ten-pound variety, etc., until by the Englishmen's abbreviation of "pun" for "pound" the abbreviation has been made to stand for penny instead of pound, as originally intended.